REMARKS

The FINAL Office Action (FOA) issued July 17, 2008, has been carefully considered and the amendments and these remarks are responsive thereto. Claims 1-26 are pending in this application. Claims 1-21 and 23-26 have been amended and claim 27 added. The Examiner appears to suggest amendments at Page 6 of the FOA as follows: "The examiner further notes that the applicant has not disclosed the implementation specifics of any of the claimed device (such as lines of code for a dsp or actual circuit routing of the claimed device)." Applicants, as a consequence, for example, have amended claim 1 to recite: "an entertainment sound adapter of said electronic device" as supported, for example, by sound adapter 199 of FIG. 1. Moreover, the flowchart of FIG. 6 supports the feature of new claim 27: "operating said non-training audio application for training the acoustic echo canceller so long as a processing load on a processor of said electronic device is less than an average load of said processor of said electronic device." Claims 7/6/1, 18/12 and 19/18/12 are similar and also are supported by the flowchart of FIG. 6. It is respectfully submitted that the applied and cited prior art fail to disclose, for example, with reference to claim 1: "utilizing sound output of an entertainment sound adapter of said electronic device, said entertainment sound adapter output being sampled at a second higher sampling rate than said first sampling rate, said entertainment sound adapter output corresponding to a non-training audio application of said electronic device to train an acoustic echo canceller in a background of said telecommunications application." As requested, circuit routing is thus specified for the recited sound output. Other independent claims 10, 12 and 21 have been amended to recite "an entertainment sound adapter of an electronic device" not shown by the applied art while independent claim 23 has been amended to recite "implementing a telecommunications application of a computer having a telecommunication signal sampled at a first sampling rate;" and "receiving sound output of an entertainment sound adapter from the computer . . . sampled at a second sampling rate, said sampling rate being higher than said first sampling rate".

The Examiner in the FOA continues to reject claims 1-4, 9-15 and 20-22 under 35 USC 102(b) as being anticipated by Nyhart et al. (5,553,137). The Examiner further rejects claims 5, 7-8, 16, 18-19 and 23-26 under 35 USC 103 as being unpatentable over Nyhart et al. (5,553,137)

(hereinafter, Nyhart) as applied to claims 1 and 12. The Examiner rejects claims 6 and 17 under 35 USC 103 as being unpatentable over Nyhart as applied to claims 1 and 12 and further in view of applicant's admitted prior art (spec). The Examiner states "Applicant's admitted prior art discloses well known adaptive filters used to perform echo cancelling. The digital system inherently comprises means to delay all signal paths so as to synchronize the signals (to give 'real time' bidirectional communication.) (spec. pages 1 and 2). It would have been obvious to one of ordinary skill in the art at the time of this application to implement well known echo canceller features like a filter and delay means for the purpose of implemented the disclosed canceller."

The "admitted prior art" at pages 1 and 2 of the specification comprises a reference to adaptive filters used to perform echo cancelling. Indeed, an "adaptive filter" is disclosed at page 1, lines 15-23, where it is further stated that "the stored coefficients will be invalid or possibly worse than starting from a zero coefficient point." On page 2, it is stated: "Another approach involves reducing the local speaker volume when a local user is speaking into the microphone so as to reduce the canceling requirements of the adaptive filter."

Consequently, the Examiner's use of so-called admitted prior art is respectfully traversed as teaching anything other than what is stated in the specification. The Examiner must provide some citation to a reference which teaches what the Examiner alleges the prior art teaches beyond the admitted prior art at pages 1 and 2 of the specification, for example, "The digital system inherently comprises means to delay all signal paths so as to synchronize the signals. . ."

With respect to "inherently comprises means to delay," the Examiner states: "It is well known to buffer and delay processing stages in order to synchronize realtime bidirectional communication systems. . . . Applicant has not disclosed the implementation specifics of any of the claimed device . . . (as quoted above). . . it is well known to implement functions and algorithms digitally, using processing, buffering and delay stages for the purpose of implementing the disclosed synchronized bidirectional communications systems."

The Examiner responds to arguments as follows: "One of ordinary skill in the art would realize that prior art systems existed and could benefit from obvious combinations, such as the one from Nyhart."

The Examiner states that he "does (not) understand applicant's argument" that "Nyhart's background section teaches away from applicant's claims" and "requests clarification." Also, the Examiner disagrees "that Nyhart's noise sequence is not a specially designed sequence."

Features of claimed embodiments missing from Nyhart

We now summarize the allegations of the Examiner regarding Nyhart and identify features of claimed embodiments missing from Nyhart. Nyhart allegedly teaches non-training audio according to the BACKGROUND (paragraph 2 of the Office Action) re claims 1, 2, 12 13 and 21. The Examiner states that the non-training audio may be "audio" re claims 3, 10, 11, 14 and 22. Further claims are also discussed with no specific reference to any support in Nyhart.

There is a discussion in the Nyhart BACKGROUND of using "sidetone" which is the intentional combination of microphone pick-up to be heard by the near end caller or background noise which can result in the following: "an increased chance that the near end user will begin speaking before convergence. This in turn results in the near end user initially hearing his sidetone as the canceller converges. If the noise level is increased to a level higher than background noise, the far end user may hear the added noise for the duration of the training of the canceller." Thus, the approaches taken in Nyhart's BACKGROUND have problems that remain unsolved and teach away from Applicants' claims. They teach away from Applicants' claimed embodiments because Nyhart has no concept of utilizing sound output of an entertainment sound adapter of an electronic device to train an acoustic echo canceller of the device in a background of a telecommunications application. Nyhart strictly relates to telecommunications and, in particular, "In response to noise generated between the dialing of digits, the echo canceller converges on noise to optimize sidetone," (Nyhart, col. 2, ll. 1-4) Nyhart involves "first and second radios and a base station having an echo canceller," (Nyhart, col. 1, ll. 57-60).

As introduced in the Nyhart ABSTRACT, Nyhart teaches and suggests training "on noise generated by the echo canceller (124) during inter digit dialing." In particular, at col. 3, ll. 11-28, the DSP 124 generates low level white noise in a pseudo random (PN) sequence onto the two wire phone line 126 during inter digit dialing with the result: "The echo canceller 124 is thus trained during the inter digit dialing time before two way communication between the near end

and far end users is established." This is not a disclosure or suggestion of Applicants' claimed embodiments.

Applicants' claims as amended clearly recite distinctions and features that one of ordinary creativity or one using common sense (see *KSR v. Teleflex guidelines re "obviousness"*) in view of Nyhart or the admitted prior art would not obtain without the use of improper hindsight reconstruction. Moreover, Nyhart and the admitted prior art teach away from the recited non-training audio application, for example, an entertainment application playing in the background of a telecommunications application having a first sampling rate and the non-training audio application having a second, higher sampling rate.

What is most troubling is the Examiner's off-hand remark: "an echo canceller could be implemented on a phone or computer with a known interface that produces the *external* audio signal for training for the purpose of removing echoes from those devices." This truly admits of hindsight reconstruction. Nyhart fails to discuss any other external audio signal than noise generated as low level white noise by DSP 124 (col. 3, ll. 12-28). This is not a disclosure, for example, of "utilizing sound output of an entertainment sound adapter of said electronic device, said entertainment sound adapter output being sampled at a second higher sampling rate than said first sampling rate, said entertainment sound adapter output corresponding to a non-training audio application of said electronic device to train the acoustic echo canceller in a background of said telecommunications application." Nyhart has no entertainment sound adapter and is not an electronic device as recited. There is no concept in Nyhart of an "external audio signal" other than low level white noise. It is not sound output of an entertainment sound adapter of an electronic device. Per claim 2/1, Nyhart, for example, has no "entertainment application" or "program audio" which clearly differentiates from noise. Claim 3/2/1 specifies "streaming audio sound" which is not white noise.

An advantage of embodiments involving an adaptive filter using background training via an entertainment sound adapter is that "background training would not need to operate continuously" as stated at page 13 of the specification (paragraph [0047] of the published application): "idle cycles of the processor can be used to train the echo canceller whenever the speaker is used, whether in video games, playing MP3s, CDs, or other audio files, playing video files, or even during the typical bells and whistles of the PC alerting the user to emails and other

warnings." Consequently, no PN noise generation is required as in Nyhart. An entertainment sound adapter of an electronic device is present for other purposes than echo canceller traning. Applicant's amended claims discuss an entertainment sound adapter that is used for non-training and for training. The Examiner does not address this advantage. The Examiner is referred to MPEP 707.07(f): ANSWERING ASSERTED ADVANTAGES. Nyhart is not background training. While Nyhart training occurs during interdigital dialing and so does not need to operate continuously, Nyhart is limited to operating only during a brief portion of a "telecommunications application" and certainly not in a background of a telecommunications application.

Claim 2/1 as amended reads, for example: "the non-training audio application is an entertainment application," and there is no entertainment application in Nyhart and no "entertainment sound adapter output" or output that includes "program audio". White noise is not entertaining and is not program audio. To the contrary, white noise is annoying.

Claim 3/2/1 as amended refers to streaming audio sound, and Nyhart fails to refer to "streaming audio sound."

Claim 4/1 discusses an entertainment application of a personal computer, and Nyhart fails to discuss such an application.

Claim 5/1 relates to matching sample rates as supported at paragraph [0044] to communication sampling rates. The Examiner cannot produce "sample rate conversion" out of thin air from Nyhart – the alleged inherent composition is clearly impermissible hindsight reconstruction of claim 5 from absolutely no disclosure in Nyhart of sample rates, their conversion or matching.

Claim 6/1 relates to "a microphone" and "a speaker" of "said electronic device" of claim 1 which admittedly may be associated with a telecommunication application but must be construed in the context of claim 1. Moreover, an adaptive filter is recited along with paths to the speaker and the microphone. Nyhart does not discuss these features in the context of claim 1 including an entertainment sound adapter.

With respect to claim 7/6/1 and 8/7/6/1, the examiner states that it would be obvious to balance and manage processor resources. Yet, the Examiner provides no support in Nyhart or any reference to any balancing as recited when both a telecommunications application and a non-training audio application are playing with the latter playing in a background for acoustic echo

canceller training. Nyhart only appears to run a communications application. Referring to FIG. 6, there exists a loop 601, 605, 610 which is support for a "processor load, high or low" box (610) and running a canceller continuously (650 when low) depending on the result.

Claim 9/8/7/6/1 is rejected based on another inherency argument. Yet, the examiner fails to cite to any reference related to, for example, "an adaptive counter to count a number of training calls to the acoustic canceller." The Examiner is again referred to FIG. 6 and the loop 601, 605, 610, 615, 620, 655 where (605) represents "audio application/other sound." If the load is high at (610), incrementing an adaptive counter (615) where if the adaptive counter value is greater than a value (620), the filter is not operated (655). Adaptive counter 854 is introduced at paragraph [0053] and further discussed at paragraphs [0057]-[0062]. Nyhart has no such adaptive counter and fails to discuss the features of claim 9/8/7/6/1.

Claim 10 is an independent claim related to a further embodiment involving "a sequence of frequencies" and "an event unrelated to training." Nyhart arguably during digit dialing outputs "a sequence of frequencies" such as so-called touch-tone dialing frequencies (the Examiner may consider white noise a sequence of frequencies), but Nyhart teaches interdigital training, not during digits. As suggested above, Nyhart does not discuss "utilizing sound output of an entertainment sound adapter of an electronic device . . ." Claim 11/10 defines the event unrelated to training as some event other than outgoing calls involving interdigital dialing so Nyhart does not discuss the recited event.

Claim 12 is an independent claim that relates to an acoustic echo canceller involving "an entertainment sound adapter of an electronic device" and "an adaptive filter adapted to be trained using sound comprising audio output of said entertainment sound adapter" and related features not discussed by Nyhart.

Further claims contain similar features to those already discussed which are not disclosed in Nyhart and are not inherent in Nyhart as suggested by the Examiner. Again, it is respectfully submitted that all such inherency arguments are improper hindsight reconstruction of Applicants' claimed embodiments and requests that some reference be cited which provides a discussion of the alleged inherent component or feature.

Again, at best, Nyhart and the admitted prior art together teach PN sequence noise generation during inter-digit dialing and an adaptive filter. Claims 1-26 as amended contain features undisclosed by the cited and applied prior art such as an entertainment sound adapter.

New claim 27/1 recites processor balancing discussed above and supported by flowchart Fig. 6 not shown by the prior art.

Applicants respectfully request reconsideration of the rejection of claims 1-26 as presently amended and new claim 27 to further clarify their features and look forward to prompt allowance of the application. Should the Examiner have any questions on this request, the Examiner is urged to contact the undersigned attorney of record at the telephone number and address given.

Respectfully submitted,
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Date: 6 October 2008

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